

REMARKS/ARGUMENTS

Claims 27 – 54 are presented for reconsideration and further examination in view of the foregoing amendments and the following remarks. Claims 1 – 26 have been canceled.

In the outstanding Office Action, the Examiner rejected claims 27 – 54 under 35 U.S.C. §112, first paragraph as containing new matter; rejected claim 36 under 35 U.S.C. §112, second paragraph as being indefinite; rejected claims 27 – 54 under 35 U.S.C. §103(a) as being unpatentable over U.S. Patent No. 6,350,120 to Sachdeva (hereinafter referred to as “the Sachdeva et al. ‘120 patent”) in view of U.S. Patent No. 5,338,198 to Wu et al. (hereinafter referred to as “the Wu et al. ‘198 patent”); and rejected claims 27 – 54 under the judicially created doctrine of obviousness-type double patenting.

By this Response and Amendment,

claim 27 has been amended to recite: “generating a prescription for orthodontic treatment including specifying the type of components used based on the components of the virtual treatment;”

claim 50 has been amended to recite: “said virtual set of components simulating the components of said real-life set;”

as amended, the rejections to independent claims 27 and 50 and the rejections to the claims dependent thereon have been traversed;

claim 36 has been amended to obviate the Examiner’s indefiniteness rejection; and
a terminal disclaimer has been filed thereby obviating the double patenting rejection.

Support for the amendments to claims 27 and 50 can be found in col. 6, lines 53 – 62 of U.S. Patent No. 6,739,869, which is the parent to the present application. Therefore, it is respectfully submitted that the above amendments do not introduce any new matter to this application within the

meaning of 35 U.S.C. §132.

Rejections Under 35 U.S.C. §112, First Paragraph

The Examiner rejected claims 27 – 54 under 35 U.S.C. §112, first paragraph as containing subject matter that was not described in the specification in such a way as to reasonably convey to one skilled in the art that the inventors had possession of the claimed invention. The Examiner specifically asserted that the language reciting “selecting a set of orthodontic components for use in an orthodontic treatment resembling and having same properties as said virtual set” in claim 27 and the language reciting “resembling and having same properties as said virtual set” in claim 50 is not in the present application or in the incorporated by reference patent no. 6,739,869 (hereinafter referred to as “the ‘869 patent”).

Response

By this Response and Amendment, claim 27 has been amended to recite: “generating a prescription for orthodontic treatment including specifying the type of components used based on the components of the virtual treatment;” and claim 50 has been amended to recite: “selecting a virtual set of orthodontic components representing real-life orthodontic components that may be used in an orthodontic treatment, said virtual set of components simulating the components of said real-life set.” Applicants submit that this language is supported by the specification of the ‘869 patent at column 6, lines 53 – 62, which states that:

If the v[irt]ual treatment uses components which simulate real-life components, once an optimal result of virtual treatment is reached, the parameters, namely the type of components which were used and the manner they were combined with one another and with the teeth model, may be recorded and this may then used to generate a prescription for the orthodontic treatment. Such a prescription may specify the type of components

used, the exact position of each component, e.g. the position of the bracket on each tooth, etc.

Accordingly, Applicants respectfully request that the Examiner reconsider and withdraw the new matter rejection.

Rejections Under 35 U.S.C. §112, Second Paragraph

The Examiner rejected claim 36 as being indefinite for not providing antecedent basis for the term “predicting.”

Response

By this Response and Amendment, claim 36 has been amended to delete the term “said” before the term “predicting,” thereby obviating the Examiner’s rejection.

Accordingly, Applicants respectfully request that the Examiner reconsider and withdraw the indefiniteness rejection.

Rejections Under 35 U.S.C. §103(a)

The Examiner rejected claims 27 – 54 as being unpatentable over the Sachdeva ‘120 patent in view of the Wu et al. ‘198 patent.

Response

By this Response and Amendment, Applicants respectfully traverse the Examiner’s rejection since neither reference, alone or in combination, discloses, teaches or suggests all of the features of the presently claimed invention.

To establish a *prima facie* case of obviousness, the Examiner must establish: (1) some suggestion or motivation to modify the references exists; (2) a reasonable expectation of success;

and (3) the prior art references teach or suggest all of the claim limitations. *Amgen, Inc. v. Chugai Pharm. Co.*, 18 USPQ2d 1016, 1023 (Fed. Cir. 1991); *In re Fine*, 5 USPQ2d 1596, 1598 (Fed. Cir. 1988); *In re Wilson*, 165 USPQ 494, 496 (CCPA 1970).

1. **Independent Claim 27**

Independent claim 27 recites: “[a] method for selecting orthodontic components for use in an orthodontic treatment of an individual, the method comprising: (i) in a computer: (a) selecting a virtual set of orthodontic components representing components that may be used in an orthodontic treatment, (b) providing a first virtual three-dimensional (3D) image of a 3D model of the individual’s teeth comprising teeth of at least one jaw, the model being manipulable so as to allow its viewing from a desired direction, (c) associating the virtual set of components with the teeth in said virtual image in a manner resembling that in which such components are associated with teeth in an orthodontic treatment, to obtain a second image of said 3D model with said components associated therewith, and (d) using a set of rules, including at least one rule, defining the effect of said set of components on said teeth, computing the manner of movement of the teeth as a result of said effect, so as to obtain a third image comprising the teeth model following the virtual treatment; and (ii) generating a prescription for orthodontic treatment including specifying the type of components used based on the components of the virtual treatment.” *Present Application*, claim 27.

The Sachdeva et al. ‘120 patent discloses a system for designing an orthodontic treatment, e.g., archwires, brackets, etc., and applying that designed orthodontic treatment to a three-dimensional digital model of an orthodontic structure to predict teeth movement after applying the designed orthodontic treatment. The Sachdeva et al. ‘120 patent also discloses comparing actual placement of brackets with computer-generated placement of brackets. *See the Sachdeva et al.*

'120 patent at col. 7, lines 58 – 64.

The Wu et al. '198 patent discloses a dental modeling simulator that operates by measuring molded impressions of teeth on a support table, the support table defining an X-Y plane. A laser probe detects Z-axis measurements in a first position; the molded impression is then tilted and the measuring process is repeated to obtain theretofore hidden measurements. A virtual three-dimensional model is thus produced.

In contrast to the presently claimed invention, neither the Sachdeva et al. '120 patent nor the Wu et al. '198 patent discloses, teaches or suggests a step of “generating a prescription for orthodontic treatment including specifying the type of components used based on the components of the virtual treatment” as recited in amended independent claim 27. The Sachdeva et al. '120 patent compares actual bracket placement with virtual bracket placement. However, a “comparison” is not a “prescription.” The presently claimed invention is performing the work of the dentist, who has typically written a “prescription” for an orthodontic treatment; whereas, the dentist in the cited references must still carry out the steps of prescribing a treatment. Thus, as the feature of “generating a prescription for orthodontic treatment including specifying the type of components used based on the components of the virtual treatment,” as recited in amended independent claim 27, is neither taught nor suggested by either the Sachdeva et al. '120 patent or the Wu et al. '198 patent, neither of these references, alone or in combination, renders the presently claimed invention obvious.

Accordingly, Applicants respectfully request that the Examiner allow amended independent claim 27 and allow all claims dependent thereon.

2. **Independent Claim 50**

And independent claim 50 recites: “[a] method for selecting real-life orthodontic components for use in an orthodontic treatment of an individual, the method comprising: (i) in a computer: (a) selecting a virtual set of orthodontic components representing real-life orthodontic components that may be used in an orthodontic treatment, said virtual set of components simulating the components of said real-life set, (b) providing a first virtual three-dimensional (3D) image of a 3D model of the individual’s teeth comprising teeth of at least one jaw, the model being manipulable so as to allow its viewing from a desired direction, (c) associating the virtual set of components with the teeth in said virtual image in a manner resembling that in which such components are associated with teeth in an orthodontic treatment, to obtain a second image of said 3D model with said components associated therewith, and (d) using a set of rules, including at least one rule, defining the effect of said set of components on said teeth, computing the manner of movement of the teeth as a result of said effect, so as to obtain a third image comprising the teeth model following the virtual treatment; and (ii) repeating step (i) a plurality of times until said substep (d) provides a desired result of the virtual treatment, wherein each time step (i) is repeated at least one of the following is changed: (A) in step (a) at least one said orthodontic components is changed for a different orthodontic component; (B) in step (b) said association of at least one said orthodontic component with respect to a tooth in said virtual image is changed with respect to the preceding association.”

Present Application, claim 50.

The Sachdeva et al. ‘120 patent discloses a system for designing an orthodontic treatment, e.g., archwires, brackets, etc., and applying that designed orthodontic treatment to a three-dimensional digital model of an orthodontic structure to predict teeth movement after applying the designed orthodontic treatment. The Sachdeva et al. ‘120 patent also discloses comparing actual

placement of brackets with computer-generated placement of brackets. *See the Sachdeva et al. '120 patent* at col. 7, lines 58 – 64.

The Wu et al. '198 patent discloses a dental modeling simulator that operates by measuring molded impressions of teeth on a support table, the support table defining an X-Y plane. A laser probe detects Z-axis measurements in a first position; the molded impression is then tilted and the measuring process is repeated to obtain theretofore hidden measurements. A virtual three-dimensional model is thus produced.

In contrast to the presently claimed invention, neither the Sachdeva et al. '120 patent nor the Wu et al. '198 patent discloses, teaches or suggests a “virtual set of components simulating the components of said real-life set,” as recited in amended independent claim 50. The Sachdeva et al. '120 patent discloses “Designing An Orthodontic Apparatus,” (*see the Sachdeva et al. '120 patent Title, underlining added*); however, the Sachdeva et al. '120 patent does not disclose that a “select[ed] virtual set of components simulate[es] the components of said real life set.” Generation of archwires, for example, is “based on the three-dimensional digital model of the *desired* orthodontic structure and user inputs,” *Id.* at col. 6, lines 36 – 39, *emphasis added*. Thus, as a “virtual set of components simulating the components of said real-life set,” as recited in amended independent claim 50, is neither taught nor suggested by either the Sachdeva et al. '120 patent or the Wu et al. '198 patent, neither of these references, alone or in combination, renders the presently claimed invention obvious.

Accordingly, Applicants respectfully request that the Examiner allow amended independent claim 50 and allow all claims dependent thereon.

Obviousness-Type Double Patenting Rejection

The Examiner rejected claims 27 – 54 under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1 – 18 of the '869 patent.

Response

By this Response and Amendment, a terminal disclaimer has been filed thereby obviating the double patenting rejection.

Accordingly, Applicants respectfully request that the Examiner reconsider and withdraw the obviousness-type double patenting rejection.

CONCLUSION

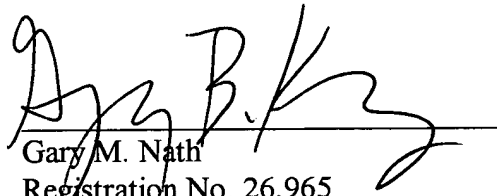
In light of the foregoing, Applicants submit that the application is now in condition for allowance. If the Examiner believes the application is not in condition for allowance, Applicants respectfully request that the Examiner contact the undersigned attorney if it is believed that such contact will expedite the prosecution of the application.

In the event this paper is not timely filed, Applicants petition for an appropriate extension of time. Please charge any fee deficiency or credit any overpayment to Deposit Account No. 14-0112.

Respectfully submitted,
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